Analysis of Brownfield Cleanup Alternatives

BROWNFIELD HAZARDOUS SUBSTANCE CLEANUP
EPA COOPERATIVE AGREEMENT #00D47716-0
FORMER RAIL DEPOT
124 RAILROAD STREET
PICKENS, PICKENS COUNTY, SC

January 3, 2017
Terracon Project No. 86157240

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City of Pickens
Pickens, South Carolina

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Analysis of Brownfield Cleanup Alternatives
In Support of EPA Brownfield Cleanup Funding Proposal
(Hazardous Substances)
Former Rail Depot

124 Railroad Street
Pickens, South Carolina
January 3, 2017

APPROVALS:

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1.0 INTRODUCTION AND BACKGROUND

This Analysis of Brownfield Cleanup Alternatives (ABCA) is in support of a proposal application for United States Environmental Protection Agency (EPA) Brownfield Cleanup grant funding to address hazardous substances as asbestos-containing material (ACM) and lead based paint (LBP) at the Former Rail Depot (Site) located at 124 Railroad Street in Pickens, Pickens County, South Carolina. The City of Pickens (City) intends to remove the hazardous building materials from the site in support of their goal to demolish the current site structure and redevelop the site for reuse as a plaza, greenspace, and trailhead for the Doodle Trail and to serve as a catalyst for redevelopment in a blighted neighborhood.

The EPA Brownfield Cleanup funding proposal must include, as an attachment, an ABCA which briefly summarizes information about the site and contamination issues, cleanup standards, applicable laws, cleanup alternatives considered, and the proposed cleanup. The ABCA should also include information on the effectiveness, the ability of the grantee to implement each alternative, the cost of each proposed cleanup alternative, an evaluation of how commonly accepted climate change conditions might impact proposed cleanup alternatives, and an analysis of the reasonableness of the various cleanup alternatives considered, including the one chosen. The ABCA submitted as part of the proposal is intended as a brief preliminary document summarizing the larger and more detailed technical and financial evaluations performed in addressing each of these areas. The ABCA may be modified technically and financially or in more depth relative to each of these areas upon award of funding and in response to community interaction.

Cleanup alternatives were evaluated in accordance with EPA Region 4 protocols and general guidance required prior to implementation of a cleanup design using EPA Brownfields Grant funding. More specifically, this ABCA summarizes viable cleanup alternatives based on site-specific conditions, technical feasibility, resiliency to climate change conditions, and preliminary cost/benefit analyses. Specific cleanup alternatives and associated recommendations are presented in the applicable sections of this report.

1.1 Background

The site is located at 124 Railroad Street in Pickens, Pickens County, South Carolina. The site is an approximate 1.86 acre parcel currently owned by the City of Pickens under Pickens County Tax Map # 4181-16-94-6078. The site was developed as a passenger train depot with rail yard and shipping warehouses as early as 1889. Warehousing facilities on site were expanded in the 1930s. The existing building and former open shed were constructed in the 1960s and operated as a box car assembly operation until approximately 1982 under various entities including Golden Tye, National Railway Utilization Corporation (NRUC) and Emergent Group. After 1982, the facility provided repair services for the box cars until 1995, at which point, the operations were changed to railroad locomotive repair and refurbishing (Pickens Railroad Company) until 2012 when the City of Pickens acquired the site. The building has been vacant since.

1.2 Site Assessment Findings

Terracon conducted a Phase I ESA, dated December 17, 2012 for Pickens Railway Company. The report stated that during the site reconnaissance, field personnel identified two air compressors, interior floor drains, oily stained concrete and soil, a diesel above ground storage tank (AST) and diesel stained soil, and multiple 55-gallon drums, totes and 5-gallon containers for various substances. A records review revealed that the site was incorrectly mislabeled as a FINDS site. Terracon identified the historical use of the site for repairs and maintenance of locomotives, and the release associated with a diesel AST as RECs associated with the site. Terracon recommended soil sampling in the areas of historic repair and maintenance operations and in the area of the diesel AST.

Additionally, the Terracon 2012 Phase I ESA report summarized several prior environmental reports by RUST Environmental & Infrastructure (RUST). In an October 1993 Phase I Site Assessment report, RUST identified several concerns related to the maintenance operations of rail cars and trains on site. RECs were identified with areas of petroleum stained concrete floor/soil in the shop/storage area and exterior areas of the property from various pieces of machinery, a leaking air compressor, a drill press, a former in-ground pit, a former Exxon fuel depot line, a former on-site UST system and various housekeeping related issues. RUST recommended a subsurface soil investigation at several locations throughout the site to determine impacts from the identified concerns. In a December 1993 Phase II report, RUST sampled soils for total petroleum hydrocarbons (TPH) in the location of the former leaking compressor, former Exxon fuel depot line, former UST system, and the transfer wheel pit. The report indicated relatively low concentrations of TPH in the area of the leaking air compressor, the former Exxon fuel depot line and the former UST system. No TPH concentrations were detected from the transfer wheel pit. A sludge sample taken from the interior of the transfer wheel pit revealed elevated TPH concentrations and minor metal concentrations. RUST recommended that the sludge be removed. A March 1996 Phase I Update by RUST indicated that no RECs were identified with the site since the August 1993 assessment as a result of operations at the site or from off-site impacts.

Terracon completed a Soil Investigation Report, dated March 1, 2013, which reported soil investigation activities at the site, recommended from the previous December 2012 Phase I ESA by Terracon. Soil samples collected from four soil borings installed in the identified areas of concern indicated no volatile organic compounds (VOCs) or polycyclic aromatic hydrocarbons (PAHs) above the method detection limit, and several metal constituents detected were well below their respective industrial/commercial and residential Regional Screening Levels (RSLs). Terracon recommended no further assessment be performed at the time; however, the removal of the diesel AST and the excavation of 3 feet of the underlying soils was recommended.

In response to the recommendations from the March 2013 Soil Investigation Report, Terracon oversaw the removal of the diesel AST and soil excavation activities. Terracon completed a Soil Excavation Letter, dated May 31, 2013, which reported soil excavation activities associated with the diesel AST. During these activities, approximately 32 tons of soil were removed from the base of the former diesel AST. Terracon concluded that the diesel impacted soil was removed and properly disposed, and further stated that no additional actions were warranted.

In November 2015, Terracon completed a Phase I ESA and an Asbestos and Lead-Containing Paint Survey on the site. The Phase I ESA identified no RECs associated with the site; however, the Asbestos and Lead-Containing Paint Survey identified regulated quantities of asbestos in silver paint and tar on a metal roof system, base flashing on the office roof, brown/ black window/ door caulk, window glazing compound, felt/mastic on an exterior wall, 9-inch beige and brown floor tile within the office, brown sheet vinyl within the office, 12-inch brown floor tile, drywall joint compound, flashing on a former awning, flashing on a metal compressed gas storage shed roof, and black sink undercoating. Additionally, mastic at roof drain elbows in the warehouse building and apparent thermal system insulation (TSI) debris located in the crawlspace were unable to be sampled due to safety concerns; however, based on visual observations, these materials were assumed to contain asbestos. Lead containing paint was identified in samples of several paint systems present throughout the structure. Samples of black paint on interior block walls and white paint on interior wooden walls contained lead at concentrations in excess of 0.06% (by weight) which is the criterion for classification as “lead based paint” in South Carolina.

The Asbestos and Lead-Containing Paint Survey recommended that that identified asbestos containing materials (ACM) be removed by a South Carolina licensed asbestos abatement contractor prior to demolition of the structure and that third-party asbestos air monitoring be performed during the abatement of the friable materials. Preparation of an asbestos removal work plan was also recommended. Additionally, Terracon recommended that all paint systems be managed as “lead containing” and that the proposed waste disposal facility be notified for pre-approval prior to the material being shipped offsite.

The following table provides a summary of the ACM that were identified in the structure.

Description	Analytical Result	Location	Condition	Estimated Quantity
Roof Coating	2.4%-5% Chrysotile	Northwestern Metal Roof System	Good	1500 s.f.
Black Mastic on Roof Drain Assemblies	Assumed Positive	Warehouse Area	Good	20 s.f.
Base Flashing	5% Chrysotile	Western Office Roof Section	Good	150 s.f.
Brown/Black Window/Door Caulking	8% Chrysotile	Break Room Area	Good	10 s.f.
Glazing Compound	3% Chrysotile	Northern Side of Structure	Damaged	30 s.f.
Felt/Mastic	4% Chrysotile	Eastern Exterior Wall	Good	500 s.f.
9-Inch Beige Floor Tile	5% Chrysotile	Office Area	Good	1,200 s.f.
9-Inch Brown Floor Tile	4% Chrysotile	Office Area	Good	1,200 s.f.
Sheet Flooring	10% Chrysotile	Office Area	Good	600 s.f.
12-Inch Brown Floor Tile	2% Chrysotile	Office Area	Good	50 s.f.
Drywall Joint Compound (ceilings and walls)	2% Chrysotile	Office and Break Room Areas	Good	2,500 s.f.
Flashing on Metal Roof	5% Chrysotile	Compressed Gas Storage Area	Good	20 s.f.
Black Sink Undercoating	2% Chrysotile	Break Room	Good	5 s.f.
Apparent TSI Remnants	Assumed Positive	Crawlspace	Damaged	5 c.f.

2.0 PROJECT GOAL AND RE-USE PLAN

In May of 2014, the Pickens Doodle-Line Rail-to-Trail Feasibility Study was completed for the partnership between the City of Easley and the City of Pickens. This study included developing trail heads in each City (for Pickens, the former rail depot property will serve as the trail head). In 2015, the two Cities constructed the 7.5 mile Doodle Trail in between their Trail Head properties. In 2015, the City of Pickens completed a Trail Head design plan which included the eventual demolition and cleanup of the railroad buildings when funding becomes available. In 2016, the City is planning to extend the Doodle Trail to the southeast edge of the historic downtown, construct restrooms, and develop greenspace, a plaza, educational garden, and community space utilizing the Former Rail Depot site. The development of the Doodle Trail and Trail Head were also addressed in the City's Master Plan developed in 2012.

EPA brownfield cleanup funding will be used to abate ACM from the site structure prior to demolition using other funding sources. This allows immediate and definitive resolution of the public health issue, while final demolitions can then proceed on a schedule that time and resources allows without worry or expense of maintaining and isolating damaged materials from public exposure. Throughout demolition, all paint systems will be managed and disposed of as “lead-containing.”

3.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

The regulated contaminant of concern for remedy is asbestos. Asbestos is the name given to a group of six different fibrous minerals that occur naturally in the environment. Asbestos minerals have separable long fibers that are strong and flexible enough to be spun and woven and are heat resistant. Because of these characteristics, asbestos has been used for a wide range of manufactured goods, mostly in building, friction products, heat-resistant fabrics, packaging, gaskets, and coatings. Asbestos fibers can enter the air or water from the breakdown of natural deposits and manufactured asbestos products. Asbestos fibers do not evaporate into air or dissolve in water. Small diameter fibers and particles may remain suspended in air for a long time and be carried long distances by wind or water before settling down. Larger diameter fibers and particles tend to settle more quickly. Asbestos fibers are not able to move through soil. Asbestos fibers are generally not broken down to other compounds and will remain virtually unchanged over long periods. Exposure to asbestos usually occurs by breathing contaminated air in workplaces that make or use asbestos. Asbestos is also found in the air of buildings containing asbestos that are being torn down or renovated. Asbestos exposure can cause serious lung problems and cancer. More detailed information on asbestos is attached as the Agency for Toxic Substance and Disease Registry’s ToxFAQ™ for Asbestos.

Lead-based paint (LBP) is regulated by the EPA and SCDHEC for removal and disposal purposes. The EPA defines LBP as paint, varnish, stain, or other applied coating that contains lead equal to or greater than 1.0 mg/cm^2, 5,000 mg/kg, or 0.5% by dry weight as determined by laboratory analysis. The SCDHEC regulations require that painted demolition debris with a lead concentration greater than 0.06% by weight or 0.7 milligrams per square centimeter (mg/cm^2) be disposed in a permitted Class II or Class III landfill. Paint systems were observed to be in good condition during a November 2014 survey performed by Terracon. Since the redevelopment plan for the Site includes complete demolition of the onsite structure it is not required to abate or encapsulate the LBP-coated materials provided that the paint is left intact on the

substrate. Therefore, although lead containing paint is present on the Site, it is not considered to be a contaminant of concern.

3.1 Cleanup Responsibility

The City of Pickens will be the cooperative agreement recipient responsible for hiring contractors. The City will use a qualified Environmental Professional to assist with contracting documents, cleanup contractor oversight and final documentation. The cleanup will be conducted by an asbestos abatement contractor licensed in the State of South Carolina. A demolition permit will be obtained from the South Carolina Department of Environmental Control (SCDHEC) and local agencies. Applicable documentation will be submitted as required to the SCDHEC.

3.2 Cleanup Standards

Standards have been established by the Occupational Safety and Health Administration (OSHA) to limit exposure of workers in the workplace. There are two types of short-term limits, as follows:

- STEL (short-term exposure limit): 1.0 PCM f/cc (fibers per cubic centimeter as detected using phase contrast microscopy).

- TWA PEL (8-hour time-weighted average permissible exposure level): 0.1 PCM f/cc (Source: USEPA, 2003 – Libby Asbestos Site Residential/Commercial Cleanup Action Level and Clearance Criteria Technical Memorandum, Final – December 15, 2003).

The asbestos NESHAP (40 CFR Part 61, Subpart M) regulates asbestos fiber emissions and asbestos waste disposal practices. It also requires the identification and classification of existing building materials prior to demolition or renovation activity. Under NESHAP, asbestos-containing building materials are classified as either friable, Category I non-friable or Category II non-friable ACM. Friable materials are those that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure. Category I non-friable ACM includes packing materials, gaskets, resilient floor coverings and asphalt roofing products containing more than 1 percent (%) asbestos. Category II non-friable ACM are non-friable materials other than Category I materials that contain more than 1% asbestos.

Friable ACM, Category I and Category II non-friable ACM which is in poor condition and has become friable or which will be subjected to drilling, sanding, grinding, cutting or abrading and which could be crushed or pulverized during anticipated demolition activities are considered regulated ACM (RACM). RACM must be removed prior to renovation or demolition activities.

In the state of South Carolina, asbestos activities are regulated by the Department of Health and Environmental Control (SCDHEC) under the SCDHEC Regulation 61-86.1 Standards of Performance for Asbestos Projects. The SCDHEC requires that any asbestos-related activity conducted in a public building be performed by personnel licensed by the SCDHEC. The owner or operator must provide the SCDHEC with written notification of planned abatement and removal activities prior to the commencement of those activities. The SCDHEC requires four day notification for non-friable projects and 10 day notification for

RACM projects. Asbestos abatement must be performed by SCDHEC-licensed asbestos abatement contractors. A SCDHEC-licensed Project Designer shall prepare a written abatement design for each abatement project involving the removal of greater than 3,000 square, 1,500 linear, or 656 cubic feet of RACM. Third-party air monitoring must be conducted during the abatement of friable (regulated) ACM. The SCDHEC asbestos regulations can be found at http://www.scdhec.gov.

3.3 Laws & Regulations Applicable to the Cleanup

Asbestos is regulated by the AHERA, the Toxic Substance Control Act (TSCA), the Clean Air Act (CAA), and the SCDHEC R.61-86.1. Further, to protect asbestos abatement workers, abatement work must be performed in accordance with OSHA asbestos regulations as promulgated in Title 29 of the CFR, Section 1926.1101. The following work practices should be followed prior to the initiation of demolition activities on the project site:

- Prepare abatement specifications by an SCDHEC licensed Project Designer;
- Notify the SCDHEC of intention to demolish by the required notification form and receive approval for abatement activities;
- Remove all ACM from facility being demolished before disruptive activity begins;
- Handle and dispose of ACM in an approved manner (USEPA, 2006a: Asbestos/NESHAP Regulated Asbestos-Containing Materials Abatement and SC R.61-86.1);
- Perform third-party asbestos air monitoring prior to, during, and at the conclusion of the abatement activities by an SCDHEC licensed asbestos Air Sampler; and,
- Prepare an asbestos abatement and air monitoring report at the conclusion of the project.

4.0 EVALUATION OF CLEANUP ALTERNATIVES

Asbestos is considered a hazardous substance relative to cleanup grant funding. EPA proposal guidance requires the ABCA, at a minimum, to consider two different cleanup remedies and a “no action” alternative. Asbestos mitigation in the environmental industry is an established practice. Due to its chemical and physical nature, asbestos can, generally speaking, only be managed. Unlike chemical contamination, it cannot be readily altered or broken down. The industry has historically evolved two basic approaches: removal with off-site management and in-place isolation and on-site management.

In addition to effectiveness, implementability, and cost considerations, consideration was given to the sustainability of cleanup alternatives in regard to current and future climate change concerns. According to the National Oceanic and Atmospheric Administration’s (NOAA) National Climate Assessment, the primary climate change conditions identified for the southeast region include increased temperature, decreased water availability, and rising sea levels. Increased temperature and decreased water availability have been identified as site-specific climate change considerations and the resiliency of each cleanup alternative will be evaluated against these considerations.

4.1 Cleanup Alternatives Considered

To address hazardous substances at the Site, three different alternatives were considered. These alternatives are outlined below. The following subsections present each alternative in greater detail, including estimated costs and potential contingency items:

- Cleanup Alternative A: ACM Removal Pre-Demolition
- Cleanup Alternative B: ACM Disposal Post-Demolition
- Cleanup Alternative C: No Action

Cleanup Alternative A: Pre-Demolition ACM Removal

Alternative A includes conventional removal/abatement of ACMs using standard industry practices. Abatement areas would be contained prior to the removal using polyethylene sheeting, controlled negative pressure conditions and/or other applicable measures to prevent asbestos fiber migration beyond the work zone. Some abatement procedures may require wet removals to further control potential spreading of damaged or friable asbestos and airborne particulates. During and following the abatement, ACM dust, particulates and other residual materials would be vacuumed and filtered out using a high efficiency particulate air (HEPA) filtration system.

ACM would be removed under an SCDHEC-approved permit and containerized for off-site landfill disposal as a special or regulated waste. The most common removal method is a “bag out” approach that uses labeling bags designed to contain ACM in manageable quantities. Leak-tight containers would be required if wet removals are performed. Landfill disposal authorizations would be secured prior to initiating the work. These authorizations are specific to the disposal facility.

ACM removal must be performed by a South Carolina-licensed abatement contractor. In addition, this work requires a 10 business day notification to the SCDHEC Asbestos Section and appropriate coordination with SCDHEC representatives, as needed, throughout the abatement project. An air monitoring program will be required for removal of friable or highly damaged ACM. Final clearance would be granted following a visual examination of the work area followed by receipt of acceptable air quality testing results (for RACM).

4.1.1 Effectiveness – Including Climate Change Considerations

The ACM is permanently removed. This approach is technically effective as a definitive and direct physical elimination of the contaminants that produce unacceptable public risk. The remedy usually does not significantly alter structural conditions due to typical ACM uses. Demolition restrictions would not remain following demonstration of clearance criteria. Excluding clearance sampling, follow-up inspections and maintenance will not be required. With removal and off-site disposal of contaminants, the approach requires no special post-remedy institutional or land use controls for the property.

Potential disadvantages; Non-friable ACM in good condition presents limited exposure risks prior to removal. Removals are likely to damage non-friable ACM and trigger additional containment and air monitoring regardless of previous conditions. Abatement costs can increase if previous estimates do not quantify all ACM, particularly in hard to access locations. Complete removal may be tedious and time consuming, with diminishing cost/benefit returns as the project continues. This option creates a waste generation stream and associated liabilities for the generator.

The site-specific climate change conditions identified include increased temperature and decreased water availability. Removing all ACM from the site ensures that the cleanup effectively addresses these climate change considerations.

4.1.2 Implementability

This alternative is technically achievable. It is a mature remedy common in the remediation industry. The approach requires specialized equipment readily available in the local demolition and engineering markets. A specialized labor force exists in South Carolina to accomplish the remedy. The implementation period is shorter-term and can be conducted during periods of freezing weather.

4.1.3 Cost

Based upon Terracon's experience with similar projects, the estimated cost to remove ACM from the structure is approximately $115,000, including interim security, professional environmental consulting services, and waste removal and disposal.

4.2 Cleanup Alternative B: ACM Disposal Post-Demolition

Alternative B involves demolition of structures intact with ACM. Structure debris would be disposed of in a regulated landfill similar to Alternative A. Demolition, handling, loading and transportation will require wetting procedures and air monitoring procedures. In this process it becomes necessary to assume that all structure debris is ACM and must be handled and disposed accordingly.

This approach hinges on structures being unsafe to the extent that the abatement contractor could not safely implement Cleanup Alternative A. This approach will require special approval by SCDHEC. ACM demolition must be performed by a South Carolina licensed abatement contractor. This approach, if approved by SCDHEC, has the positive aspect of accelerating the period of abatement to that of the demolition and disposal.

Adversely, this approach requires special approval by SCDHEC that will be made on a project-specific basis, lengthening the process of abating community risk. The potential for public airborne exposure increases as demolition occurs as the ability to control airborne asbestos becomes limited to the adequacy of wetting procedures. This approach greatly increases the volume of material that must be handled as ACM, thereby taking greater volume from existing capacity of regional landfills. This option also creates a waste generation stream and associated liabilities for the generator.

4.2.1 Effectiveness – Including Climate Change Considerations

The ACM is permanently removed. This approach is technically effective as a definitive and direct physical elimination of the contaminants available to public exposures. Follow-up inspections and maintenance will not be required. With removal and off-site disposal of contaminants, the approach requires no special post-remedy institutional or land use controls for the property.

The site-specific climate change conditions identified include increased temperature and decreased water availability. Removing all ACM from the site ensures that the cleanup effectively addresses these climate change considerations.

4.2.2 Implementability

This alternative is technically achievable although it does require a work practice variance from SCDHEC. It is a mature remedy common in the remediation industry. The approach requires specialized equipment readily available in the local demolition and engineering markets. A specialized labor force exists in South Carolina to accomplish the remedy. The implementation period is medium-term because it requires all demolition waste to be managed as asbestos-containing or asbestos-contaminated. This option can be conducted during all periods of weather.

4.2.3 Cost

The onsite structure is approximately 20,000 s.f. which would produce approximately 5,700 cubic yards of total debris[1]. This material would have to be considered ACM for disposal. Using $60/cubic yard disposal cost of ACM material (based on Terracon's experience) increases the disposal cost by approximately $280,000. There would also be additional costs for professional environmental consulting services in order to obtain and maintain approval of a work practice variance from SCDHEC for this option. Comparatively, this alternative is cost-prohibitive.

4.3 Cleanup Alternative C: No Action

The "no action" scenario is required by the EPA ABCA process. This alternative is to not address contaminants and trust that exposures as airborne particulate/fibers or dust through further weathering and degradation of the structure does not make contaminants available for human exposure by inhalation.

4.3.1 Effectiveness

This alternative is deemed ineffective and unacceptable for continued Brownfield redevelopment for this Site because:

- It is likely to be considered unacceptable to the community because citizens, nearby workers and construction workers could unknowingly be placed at risk in the future. No-action provides neither remedy nor preventive value to site conditions or in support of improved public health.

[1] Debris Estimating Field Guide - FEMA 329, September 2010. Federal Emergency Management Agency, Department of Homeland Security.

- This approach is unacceptable technically in that the microscopic asbestos fibers are known human carcinogens and provide no readily discernable exposure warning mechanism such as odor or other sensory identification. Without an expensive and long-term outdoor air/dust sampling program, there is no ability to identify if and when residual contaminants may be available for exposure.

- The continued presence of ACM in the building would continue to pose a long-term health risk to the public and also to workers entering the building. The No Action Alternative would make no progress toward achieving the goals of reduction of health risks to the surrounding public and facilitating the demolition of the building for redevelopment.

4.3.2 Implementability

By its definition, taking no action precludes a discussion of implementation. The structure would be left in the unused state in which it currently exists. The identified ACM would still pose a hazard to those entering the building and asbestos fibers would continue to be released to ambient air. The value of the building would continue to decrease due to deterioration. Regardless, the presence of ACM will require the City to have to continue to use portions of its maintenance budgets to stabilize ACM damage through covering open breaches into the structure and isolation of building from unauthorized entry.

4.3.3 Cost

By its definition, taking no action precludes a discussion of cost to implement. This cleanup alternative would not include any specific efforts to remove or maintain ACM in place. There would be no direct cleanup costs associated with this alterative. Further, this alternative may later result in demolition complications, delays and increased demolition costs due to ACM remaining within the structures. Direct costs associated with the No Action Alternative and associated non-use of the building would consist of providing site security. Indirect costs could include the continuing inability to utilize the property for public benefit as is currently planned.

Expanded costs could occur if fugitive asbestos is released during future storms or weathering of damaged structures that might result in secondary deposition and contamination of soils. This would impair re-use and value of surrounding property adjacent to the structure.

4.4 Cost Comparison of Alternatives

The table below presents a summary of the estimated costs for all alternatives under consideration. There would be no capital cost if the site were to remain as an unused, vacant building.

ALTERNATIVE	CAPITAL COST	ANNUAL COST
A – Pre-Demolition ACM Removal	$115,000*	N/A
B – ACM Disposal Post-Demolition	$485,000†	N/A
C – No Action	$0	$4,000‡

* - Estimate does not include costs associated with demolition, only the tasks identified for each alternative.

† - Estimate includes costs for demolition due to the nature of the alternative (total removal).

‡ - Includes costs for annual re-inspection of ACMs to document current condition.

5.0 RECOMMENDED CLEANUP ALTERNATIVE

The recommended cleanup approach is Alternative A: Asbestos Removal Pre-Demolition. This alternative would address exposure risks using a proven approach consistent with recognized industry standards while at the same time easily garnering SCDHEC approval. This option would remain comparably cost-effective under almost all abatement scenarios and building conditions. ACM removal would not require the need for subsequent inspections, maintenance and/or regulatory oversight. This alternative addresses ACM liabilities, potential contaminant sources or potential limitations to future land use and brownfields redevelopment potential consistent with the City's goals and re-use planning.